



Virginia Tech

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Evaluating Root Development & Root Strength With APEX-10 A Peat Humic Substance & Leonardite Humic Acid from Coal

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Overview

Kentucky bluegrass is a common species used for athletic fields. A problem faced by many athletic field managers is to achieve a functional playing surface soon after the field has been sodded.

The objectives of this study were to examine the effects of peat humic substance made from peat and humic acid made from leonardite on the establishment rate of Kentucky bluegrass sod as determined by post-transplant root strength, root mass, tiller density, and visual quality.

Materials and Methods

Kentucky bluegrass sod was transplanted with a six inch root zone of sand meeting USGA standards. Prior to sod transplanting expanded metal sheets with openings allowing root growth into the underlying sand, were placed on the sand surface prior to installation.

Two, 3-month runs of the trials were conducted over six months:

Trial #1: April 1st to July 1st

Trial #2: July 15th to October 15th.

- Both plots were treated with a 15-30-15 Granular fertilizer at 1-Lb. per 1,000 sq. ft.
- **APEX-10**, was applied at 3oz. /1000 sq. ft;
- Leonardite was applied at 15g / 1000 sq. ft;

APEX-10 and Leonardite treatments were applied the day after sodding and continued every two weeks until a total of six applications were applied during each experimental cycle.

Grass was mowed twice weekly at a height of 1.5 inches, 2-weeks after sod was transplanted and continuing until 2-weeks before the end of each experimental cycle. A foliar 20-20-20 with micronutrients was applied to all of the plots at 0.5 lb. N/1,000 sq. ft. Irrigation was provided on an as needed basis to prevent wilting.



- Photochemical Efficiency was measured at week two & four and then monthly.
- Shoot Density was measured at the completion of week four and the end of each experiment.
- Shoot growth was measured by taking 4-inch plugs randomly from each plot and each plug was manually counted.
- Root mass was measured taking two 4-inch by 6-inch deep plugs from each plot at week two, and then again at week four.
- Root strength was measured 4-weeks after sodding using the expanded metal root pull method.



RESULTS

Root Mass, Root Strength, and Tiller Density, all increased with **APEX-10**. Photochemical Efficiency and Visual Quality were not as overly effected which is quite common with turfgrass that is grown under optimum conditions and in the absence of a stressful environment.

CONCLUSION

Previous reports have indicated that humic acids may increase rooting due to the auxin-like

<u>DATA</u>	<u>30-days</u>		<u>60-Days</u>	
	<u>Lbs. / ft²</u>	<u>Increase</u>	<u>Lbs. / ft²</u>	<u>Increase</u>
Control	809		970	
Leonardite	884	9%	1118	15%
APEX-10	948	17%	1323	36%

hormone activities, our results agree with those reports. **APEX-10 is measurably superior to humic acids made from Leonardite** that have been previously reported.

There are two limiting factors turf managers face on newly sodded fields, a playable surface and stable footing. Results from this study have clearly demonstrated, **APEX-10** will provide the resources to overcome these limiting factors.

Dr. Erik Ervin Ph. D.

Charts Represent the Increase APEX-10 Had Over Fertilizer and Leonardite

